

NEW NORTH AMERICAN UNIFOLIOLATE CROTALARIA TAXA

(LEGUMINOSAE)

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Over the last several years I have been engaged in studies of the North American species of Crotalaria related to Crotalaria sagittalis L. During these studies it became evident that some of the plants examined represented new taxa. In the text which follows, three species and two varieties are described for the first time. A third variety is transferred to a different species from the one under which it was originally recognized. Dr. Robert H. Mohlenbrock, Southern Illinois University, has translated the descriptions into Latin and Mrs. Miriam Wysong Meyer has prepared illustrations for each of the new species.

CROTALARIA BREVIPEDUNCULATA Windler, sp. nov.

Frutex vel herba suffrutescens. Radix ignota. Caules ultra 3 dm longi, 3.5 mm crassi, internodium longissimum 1.2 cm longum, trichomis densis brevibus patentibus 0.6-0.7 mm longis. Stipulae nullae. Folia elliptica vel elliptico-oblonga, 2.1-4.4 cm longa, 5-13.5 mm lata, ad basim cuneata vel acuta late, ad apicem acuminata, trichomis laxe adpressis 0.5-0.9 mm longis; petioli 1.6-2.1 mm longi.

Inflorescentia terminal et etiam foliis opposita, pedunculo 1.2-6.1 cm longo. Bracteae sessiles lineares vel anguste lanceolatae, 4-4.4 mm longae, 0.3-0.6 mm latae; pedicellus 3.8-4.2 mm longus; calyx 10.5-11 mm longus, tubo 2.5 mm longo, trichomis patentibus 0.5-0.7 mm longis; bracteolae lineares, 3.5 mm longae, 0.2-0.3 mm latae. Corolla lutea, vexillum 10.5-11 mm longa, aequans lobis superioribus calycis; antherae elongatae 1.6-2 mm longae, antherae breves 0.3-0.4 mm longae; stylus 6.4 mm longus. Fructus et semina ignoti. Chromosome number: not known. Flowering date: December 20. Habitat: shady canyon slope with oaks and palms, elevation 3,500 feet. Range: Mexico; Durango, Sinaloa. Figure 1.

Holotype: Gentry 5311 (GH)

Type locality: Sierra Tres Picos, Durango, infrequent, scattered.

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Crotalaria brevipedunculata is characterized by its lack of stipules, short terminal inflorescences and small flowers. It most nearly resembles C. nitens, but differs from it in smaller flower size and shorter peduncles.

In addition to the holotype only one other collection of this species has been observed:

MEXICO.--Sinaloa: Puerto a Tamiapa, Gentry 5815 (MICH, NY).

CROTALARIA MEXICANA Windler, sp. nov.

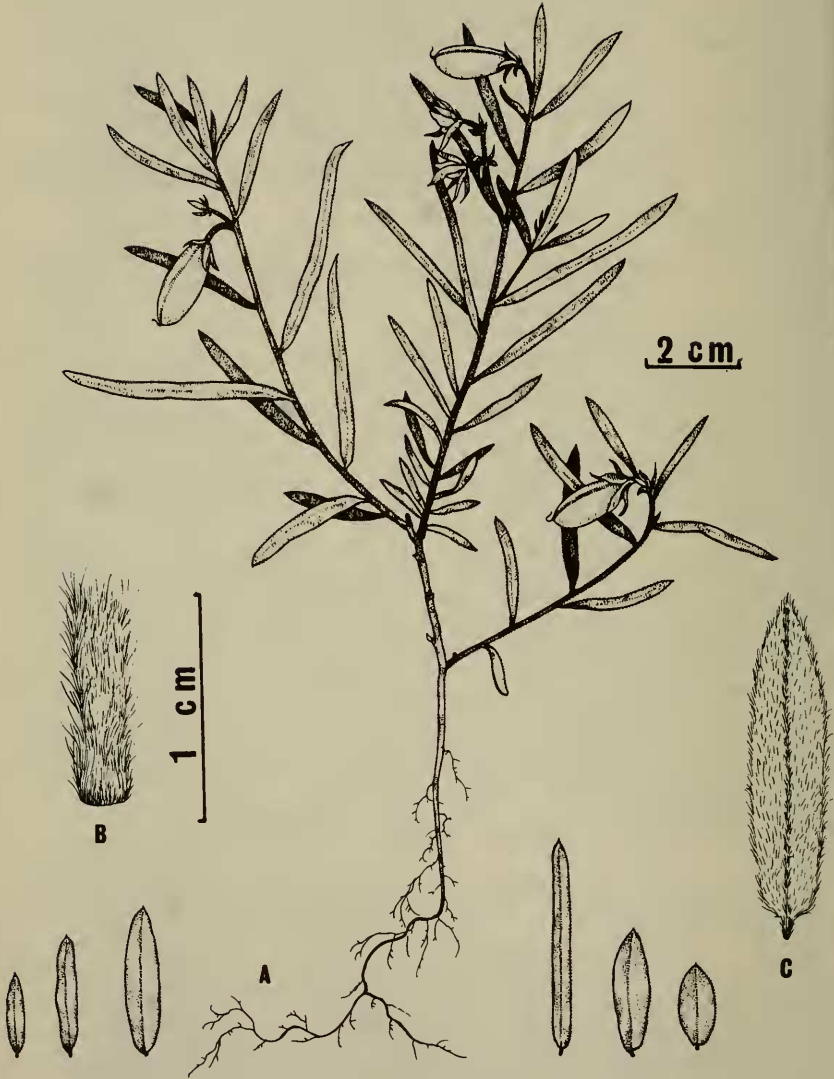
Crotalaria sagittalis var. fruticosa (Miller) Fawcett and Rendle, 1920, Vol. 4, p. 10, pro parte, sensu Senn, non sensu typus.

Herba annua erecta radice palari tenui usque 0,3 cm crassa. Caulis solitarius, 1.2-2.3 dm longus, 1.6-2.4 mm crassus, internodium longissimum 1.0-1.5 cm longum, trichomis densis adpressis 1.2-2.5 mm longis. Stipulae nullae. Folia anguste elliptica, lineari-lanceolata, vel linearia, 2.2-4.6 cm longa, 4-8 mm lata, ad basim rotundata vel cuneata, ad apicem rotundata, acuta vel acuminata, trichomis laxe adpressis 1.1-2.1 mm longis; petioli 0.5-0.6 mm longi.

Inflorescentia foliis opposita, pedunculo 0.8-2 cm longo. Bractee lanceolatae, 3.3-3.6 mm longae, 0.7-0.8 mm latae; pedicellus 2.5-4 mm longus; calyx 10.5-11.5 mm longus, tubo 2-2.5 mm longo, trichomis 0.8-2 mm longis, laxe adpressis et patentibus; bracteola lineari-lanceolata, 4-4.5 mm longa 0.5-0.6 mm lata. Corolla lutea, vexillum 10-10.5 mm longum aequans vel 0.5 mm brevior lobis superis calycis; antherae elongatae 1.5-1.7 mm longae, antherae breves 0.5-0.6 mm longae; stylus 4.8-5.3 mm longus. Fructus 2.1-2.5 cm longi, 0.8-1 cm lati; numerus seminum per legumen ignotus; semina brunnea, 1.8-2 mm longa. Chromosome number: not known. Flowering time: September - October. Habitat: dry slopes of mountains, elevation ca. 6,000 ft. Range: Mexico; Jalisco. Figure 2.

Holotype: Mexico; Jalisco, mountainside above Etzatlán, Pringle 8855 (GH). Isotypes at TEX and US.

Crotalaria mexicana is a new species, the representatives of which were referred by Senn (1939) to C. sagittalis var. fruticosa (here treated as C. sagittalis var. sagittalis). Crotalaria mexicana is most similar to C. sagittalis and C. quercetorum. It differs from C. sagittalis in its lack of stipules and absence of spreading pubescence and from C. quercetorum in its short thick peduncles and in its dense pubescence.



Crotalaria mexicana is characterized by its erect habit, dense, appressed pubescence, lack of stipules, and extremely short, leaf-opposed peduncles.

Representative specimens:

MEXICO.--Jalisco: near Etzatlan, Pringle 8855 (=type), Pringle 11807 (GH, US), Rose & Painter 7571 (US); near Guadalajara, Rose & Painter 7469 (US).

CROTALARIA NAYARITENSIS Windler, sp. nov.

Herba annua vel perennis radice polari usque 1.5 cm crassa. Caules 1-multi, 6-12 dm longi, 1.5-2.5 mm crassa, internodium longissimum 3.8-10 cm long, trichomis densis adpressis, 0.2-0.7 mm longis. Stipulae decurrentes per longitudinem internodii, 0.15-1.1 cm latae ad apicem, decrescentes ad vel trans nodum subtentem, lobi stipulares paralleli ad caulem vel patentes, 0.1-1.3 cm longi. Folia ovalia elliptica ovata, anguste ovata, oblonga vel lanceolata, 3.5-7.8 cm longa, 7-26 mm lata, ad basim obtusa vel cuneata, ad apicem obtusa, mucronata, acuminata, vel acuta, trichomis 0.3-0.8 mm longis, adpressis vel laxe adpressis; petioli 1.2-2.5 mm longi.

Inflorescentia foliis opposita, pedunculo 3.2-16 cm longo. Bracteae sessiles, lineares vel elliptico-lanceolatae, 3-4.5 mm longae, 0.2-0.5 mm latae; pedicellus 2.8-3.8 mm longus; calyx 7.5-12 mm longus, tubo 2-3.2 mm longo, trichomis 0.1-0.5 mm longis adpressis; bracteola linearis vel anguste lanceolata, 1.5-3 mm longa, 0.2-0.3 mm lata. Corolla lutea, vexillum 7-12.5 mm longum, 2 mm brevior usque 1 mm longior lobis superis calycis; antherae elongatae 1.3-2.1 mm longae, antherae breves 0.4-0.5 mm longae; stylus 5-6 mm longus. Fructus 1.3-2.3 cm longi, 0.5-0.8 cm lati; semina 30-35 per legumen, 1.6-2.4 mm longa, olivacea, brunnea, vel rubiginosa. Chromosome number: $n=16$. Flowering time: August - February. Habitat: steep moist slopes and pine woods, elevation 2,500 - 6,600 feet. Range: Mexico; Jalisco, Nayarit. Figure 3.

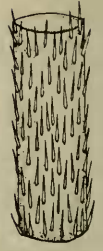
Holotype: D. R. Windler & B. K. Windler 2902 (NCU)

Type locality: Mexico: Nayarit, North of Compostella (near Km. 24), about 7 miles southwest of Tepic, along road between Tepic and Compostella. Road-cut through mountain on moist steep slope.

Crotalaria nayaritensis is a new species named for the Mexican state from which the holotype was collected. It is characterized by its spreading or diffuse habit, leaf-opposed inflorescences, small flower size, and appressed pubescence.

Figure 2. Crotalaria mexicana. A. Habit and leaf variation. B. Stem. C. Leaf pubescence.

1 cm

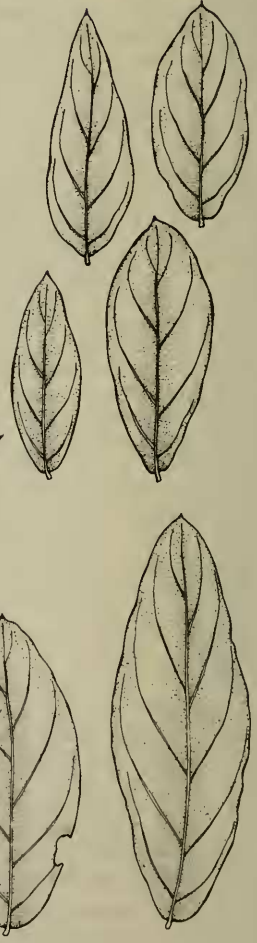


B

2 cm



A



Of the Mexican species it most nearly resembles C. bupleurifolia, but differs from it in having a smaller flower, appressed pubescence, and usually narrower stipules.

Representative specimens:

MEXICO.--Jalisco: 13 mi. SW of Autlan, 1,000 m, McVaugh 19886 (MICH); Llano Verde, municipio de Tecalitlan, 1,600 m, Rzedowski 17417 (MICH); 3 mi. S of Mazamitla, 2,100-2,200 m, McVaugh 12997 (MICH, US); San Sebastian, W to Mascota, 1,425 m, Mexia 1408 (US); Tepic, Palmer 1869 (NY, US); Nayarit: 10 mi. SE of Ahuacatlan, 1,100 - 1,300 m, Fedema 287 (MICH); N of Compostella, 3,000 ft., Windler & Windler 2902 (NCU); Mina Esperanza Rosa Morada, Ortega 6682 (US); 2 mi. N of Tepic, 3,000 ft., Windler & Windler 2897 (NCU).

CROTALARIA NITENS HBK. 1824, Vol. 6, p. 399.

In North America Crotalaria nitens variety nitens is known only from the Mexican states of Chiapas, Oaxaca, and Veracruz. The plants of the species tend to be shrubby, have terminal inflorescences, lack decurrent stipules, and have relatively large flowers. Variety gracilis may be separated from variety nitens in the following way:

Peduncles stout, 1-2 mm thick; bracts 7.5-14 mm long, 1.2-3 mm wide. C. nitens var. nitens
 Peduncles slender, 0.5-0.6 mm thick, bracts 4-5 mm long, 0.6-0.8 mm wide. C. nitens var. gracilis

CROTALARIA NITENS HBK var. GRACILIS Windler, var. nov.

Differt a var. nitenti pedunculis tenuibus (0.5-0.6 mm crassis) et bracteis parvis (4.5 mm longis, 0.6-0.8 mm latis).

Holotype: McVaugh & Koelz 1188 (MICH).

Type locality: Mexico: Jalisco; Sierra de Halo, logging road 7 miles south southwest of Tecalitlan and extending southeast toward San Isidaro, 13 - 16 miles from highway.

CROTALARIA ROTUNDIFOLIA [Walt.] Gmelin, 1792, Tome II, p. 1095.

The plants which I have ascribed to this species were treated by Senn (1939) under two specific names: Crotalaria angulata and C. maritima. Senn listed the epithet rotundifolia as a synonym for C. angulata Miller. Fernald and Schubert (1948) in publishing discussions of American types in British herbaria, indicated that the name C. rotundifolia actually applied to the plants Senn had treated as C. maritima.

Figure 3. Crotalaria nayaritensis. A. Habit and leaf variation. B. Stem.

During the present study, the two taxa were judged to be cospecific. The earliest name which appeared to apply to the species was C. angulata, a name Miller had based on a plant grown from seed from Campeche.

The application of this epithet is in question for several reasons.

1. Britten and Baker (1897) indicate the type does not differ from C. biflora L., an Asian plant. This observation has been confirmed by Dr. Robson of the British Museum (Personal communication, Nov. 1968, in a letter to S. W. Leonard).
2. No plants referable to C. angulata of Senn have been observed from the vicinity of Campeche.
3. Miller's description of C. angulata does not match the application of Senn or the available type in the Miller Herbarium.

Since these points seem to indicate one or possibly more errors, I feel that the name should be rejected as a source of confusion (ICBN Articles 69 & 70).

After rejection of Crotalaria angulata, the earliest name which applies to the plants of the species is C. rotundifolia [Walt.] Gmelin. Two varieties, based on Senn's species, C. angulata and C. maritima, are recognized. Crotalaria rotundifolia variety rotundifolia is the plant with appressed pubescence referred to C. maritima by Senn. The other variety is designated in the following way:

CROTALARIA ROTUNDIFOLIA var. VULGARIS Windler, var. nov.

Crotalaria angulata Miller, 1768, sensu Senn, 1939.
(See discussion above.)

Differt a C. rotundifolia var. rotundifolia pubescentia patenti in caule, foliis, pedunculo, et calyce.

Holotype: D. R. Windler and B. K. Windler 2769 (NCU)

Type locality: South Carolina; Hampton County, about three miles northwest of Yemassee on South Carolina Highway 68. Sandhill. 23 July 1967.

Crotalaria rotundifolia var. vulgaris is distinguished by its spreading pubescence. Over most of its range var. vulgaris is also characterized by round to oval leaves, but in northern Florida and southern Georgia it intergrades with the usually narrower leaved var. rotundifolia.

CROTALARIA BUPLEURIFOLIA Schlechtendal & Chamisso, 1830, Vol. 5, p. 575.

Crotalaria heldiana A. DC. in A. & A.P. DC., 1841, Vol. 9, p. 97. (Type: Grown from seed of unknown source in the garden at Karlsruhe. G!)

Crotalaria bupleurifolia is characterized by its large size, unusual stipules and large habit and flowers. The two varieties may be distinguished in the following way:

Stipules present only at the base of peduncles, decurrent for only a single internode.
 C. bupleurifolia var. bupleurifolia
 Stipules present at the base of most leaves, frequently decurrent for more than one internode.
 C. bupleurifolia var. robusta

CROTALARIA BUPLEURIFOLIA var. ROBUSTA (Senn) Windler, stat. nov.

Crotalaria pilosa var. robusta Senn, 1939, Vol. 41, p. 331.

Type locality: Temascaltepec, Cumbre de Tejupilco.

(Holotype: Hinton 2686 US!)

This variety was originally described by Senn under Crotalaria pilosa because of its stipules which wing the stem for more than one internode. However, the variety lacks the terminal inflorescence and small flower size of C. pilosa. Variety robusta's overall similarity to C. bupleurifolia var. bupleurifolia in habit, inflorescence, and flower structure were used to place the variety into C. bupleurifolia.

Representative specimens:

MEXICO.--Jalisco: 10 Km al N de La Cuesta, sobre el camino a Talpa, 1,100 m, Rzedowski 15134 (MEXU); Mexico: Plaza de Gallos, 1,200 m, Hinton 4595 (GH, NY); Sinaloa: Km 1206 on Mexico Hwy. 40, ca. 30 mi. E of Mazatlan-Guadalajara Junction, 2,700 ft., Windler & Windler 2869 (NCU).

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